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**A Method for Measuring Anthropogenic Semi-Volatile Organic Compounds in High Elevation Snow and Lake Water**

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An analytical method was developed for the extraction and analysis of a wide range of semi-volatile organic compounds (SOCs) in 50 liter high elevation snow and lake water samples. SOCs were extracted using hydrophobically and hydrophilically modified divinylbenzene solid phase extraction (SPE) devices and analyzed by gas chromatographic mass spectrometry (GC/MS) using isotope dilution and selective ion monitoring. Snow samples were gently melted and extracted using the SPE device in the laboratory. Lake water was sampled, filtered, and extracted *in situ* using an Infiltrax 100 with a 1µm glass fiber filter to trap SOCs sorbed to particulate matter and SPE device to trap dissolved SOCs. The glass fiber filter and both the SPE devices were spiked with stable isotope labeled surrogates prior to the elution of analytes. The glass fiber filter was extracted using an Accelerated Solvent Extractor (ASE). The extracts were dried with sodium sulfate, solvent exchanged to hexane, and purified with a 20g silica SPE column. Analytes were eluted from the silica columns and then concentrated with N<sub>2</sub>. Finally, these extracts were then analyzed using GC/MS with electron impact (EI) and GC/MS with electron capture negative ionization (ECNI). Detection limits for GC/EI-MS and GC/ECNI-MS were approximately 200-600 pg/L and 20-60 pg/L, respectively. Average recoveries were 88.6% (48 – 126%).